

IOWA energy BULLETIN

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As the door opens to a cozy little chocolate store on Ingersoll Avenue in Des Moines, one's senses instantly buzz with the charm of an old-world sweets shop.

At Chokolaterie Stam, glass counters brim with chocolate-covered nuts, gold-wrapped bars, pastel candies, and every shape of truffle imaginable. The smell of coffee and cappuccino wafts, as do the sounds of customers placing orders for their sweets-of-choice.

Perhaps the last sensory experience to register is the feel of the cool, comfortable air temperature in the

store. At this point the new world meets the old world.

Chokolaterie Stam is using a proven technology, geothermal heat pumps, for its heating and cooling needs. The energy source is both an economically and environmentally friendly solution for the small business.

European Expertise in Iowa

Anthonius "Ton" Stam is the owner of Chokolaterie Stam. Originally from the Netherlands, Stam moved to the United States in 1988 as a financial planner. He came to Des Moines in 1992.

His family has a century-old history of making chocolates in Amsterdam and Stam decided to bring his family trade to the Midwest. In 1998, he opened his first chocolate store at Valley West Mall in West Des Moines. He now has stores in Pella and on Ingersoll Avenue in Des Moines, with plans to open one more in Windsor Heights this summer.

The Ingersoll Avenue store building, decades old, is situated on a bustling stretch of street surrounded by restaurants, small offices and shops.

Stam not only brought his knowledge of chocolate-making, but also his environmental awareness from his homeland.

"I grew up in a culture that is very environmentally aware because we had so many people in a very small space," said Stam.

In 2002, Stam decided to establish a chocolate-making facility on the upstairs level of the Ingersoll store. The expansion would double his building square footage to 7,300 square feet,

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Anthonius "Ton" Stam stands in the kitchen of Chokolaterie Stam, which is heated and cooled with geothermal heat pumps.

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P2 Intern Program Conserves Energy for Iowa Companies

Collectively, they have helped Iowa companies save more than \$3 million in annual pollution, energy and waste reduction costs. They have conserved 3.7 million kilowatt-hours of energy. And they haven't even graduated from college yet.

Several of Iowa's brightest college students joined this select group this summer as they helped Iowa companies improve their environmental protection efforts through the Pollution Prevention (P2) Intern Program.

Alliant Energy with RMT, Inc.

Anvar Nastridtinov from Iowa State University worked with Alliant Energy Corporation and RMT, Incorporated to reduce coal flow measurements emissions in coal-fired power plants.

The Dial Corporation

University of Iowa student Ryan Daly helped The Dial Corporation in Fort Madison complete an energy evaluation to reduce energy costs. The evaluation included collection, data evaluation and recommendations for demand control.

Federal Mogul Corporation, Ignition Products

Katie Waterman, University of Northern Iowa, worked with Federal Mogul Corp. to identify waste streams and energy-saving opportunities.

Holcim (U.S.), Inc.

Bhavin Mehta, Iowa State University, interned with Holcim, Inc. in Mason City. He audited the company's compressed air system to identify and implement energy savings.

Penford Products Company

Molly Malone, The University of Iowa, helped Penford Products of Cedar Rapids reduce its electrical power demand and save energy.



University of Iowa engineering student Molly Malone at Penford Products of Cedar Rapids.

Polaris Industries

Jennifer Sleper, Central College, worked with Polaris Industries of Spirit Lake to find energy savings and process modifications in the company's wastewater treatment system.

Pure Fishing

Brian Hartsell from Iowa State University helped Pure Fishing of Spirit Lake create an energy management system to lower electrical use throughout the plant. Hartsell's project also included collecting and evaluating data to characterize electrical distributions, ranking energy conservation opportunities, and implementing improvement projects.

Specific economic and environmental results from the projects will be shared later this year. The DNR accepts applications from students and companies to participate in the program between October and January. For more information, contact Jan Loyson at the DNR at (515) 281-3142; e-mail Jan.Loyson@dnr.state.ia.us



The 2003 P2 interns convene at the Iowa State Capitol in Des Moines this May.

The program pairs engineering students from Iowa colleges and universities with industries interested in preventing pollution. This year, 22 interns were matched with companies across the state. Here are descriptions of seven Iowa companies that are including energy-related projects in their pollution prevention efforts:



Polk County Gets **Lift** from Energy Efficiency

Polk County, home to Iowa's capital city, has undergone a face-lift in its ability to save energy. Since February 2003, the county has begun saving more than \$45,000 in annual costs through the Rebuild Iowa program.

"The core of what Polk County hopes to do is operate our facilities more efficiently and avoid the unnecessary cost of inefficient equipment," said Chris Frantsvog, Polk County's energy/resource coordinator.

The county created several strategies to enhance energy efficiency efforts, including rate changes and rebates for new equipment. Additionally, energy-efficiency installations and the implementation of an Energy

Management Improvement (EMI) plan have resulted in the most savings for Polk County.

In the program's first year, energy improvements and studies have focused on the county's administration building, courthouse, jail, planning/public works facility and central maintenance facility. Improvements have included upgraded light fixtures, occupancy sensors, energy-efficient furnaces and water heaters, programmable thermostats, vending machine control devices, insulation and changes in lighting schedules.

"Polk County is unique because we have a lot of square footage," said Frantsvog. "We are focusing only on our own buildings and discovering how we can use and spend less."

Rebuild Iowa is a national initiative that is coordinated on the state level by the Iowa DNR. Through the program, communities focus on methods of increasing energy efficiency, improving productivity, and creating economic development opportunities.

Environmental results from Polk County's initiative also are a testimony to the success of the Rebuild Iowa program. The amount of greenhouse gas emissions prevented through energy savings is equivalent to removing 97 cars from the road. Carbon dioxide emissions also have been reduced by 800 tons.

Future projects for Polk County include improvements and modifications on Veteran's Auditorium, the Convention Center, juvenile detention center and several others.

Contact Rebecca Spiess with the DNR at (515) 281-5007; e-mail: Rebecca.Spiess@dnr.state.ia.us for more details about Rebuild Iowa.



Above and Below: Lighting replacements at the Polk County Jail in Des Moines.

Check Us Out

Learn about energy in Iowa on the DNR's newly designed Web Site!



www.iowadnr.com/energy/



Fertilizer Costs Jump



Farmers will pay more for fertilizer this spring, with rising natural gas prices. Natural gas is the main feedstock of most commercial nitrogen fertilizers produced in the United States, and accounts for 70 to 90 percent of the total cost of production.

Many plants have shut down temporarily because of the cost of natural gas. Since prices first spiked in 2000, 21 percent of U.S. nitrogen plants have permanently closed and 50 percent of the remaining plants have temporarily shut down. Production is now only 30 percent of the total capacity available in 1999. Midwest corn farmers can expect to pay \$10 to \$15 more per acre for fertilizer until natural gas prices drop significantly.

Farmers can reduce the amount of fertilizer needed and achieve the same crop yields by:

- ◆ applying nitrogen at the correct soil temperature (usually above 50 degrees F),
- ◆ applying nitrogen in the spring instead of the fall, when it may be vulnerable to runoff from a wet winter or spring,
- ◆ using precision agriculture application techniques, such as injection, and
- ◆ most importantly, obtaining accurate measurements to guard against applying unnecessarily high levels of fertilizer.

For more information, contact Iowa State University professor Dr. Alfred Blackmer at (515) 294-7284 or e-mail: ablackmer@iastate.edu.

Analyst's Angle:

High Fuel Prices: Iowa Farmers Feel the Burden

By Jennifer Moehlmann, DNR Data Analyst

International events in 2003 have pushed fossil fuel prices to high levels in the Midwest.

Those high prices are expected to last through autumn and winter, hitting the agricultural sector especially hard.

Lingering effects of a now-resolved oil-worker's strike in Venezuela and the war in Iraq have caused crude oil prices to rise 10 percent higher than last year; diesel fuel, gasoline and propane are all produced from crude oil. Additionally, the United States is currently experiencing historically low supplies of natural gas.



Diesel Prices on the Rise

As of July 2003,* the average price of self-serve diesel fuel was \$1.44, \$0.08 higher than one year ago. The increase in diesel prices is due to higher crude oil prices and lower supplies. The U.S. Department of Energy's Energy Information Agency (EIA) predicts diesel fuel prices will remain above \$1.40/gallon through June 2004, averaging \$1.46 in fall 2003. However, the price of diesel heavily depends on crude oil prices and the heating oil market. If either of those factors changes significantly, diesel also will be affected.



Propane Prices to Remain High

Propane prices in July reached \$0.93 per gallon, \$0.15 above the retail price of propane one year ago. Propane inventory levels were below normal

most of the winter and spring, due to increased demand for industrial use and home heating, as well as the diversion of propane to supply Central and South American markets left dry by the Venezuelan strike.

Propane prices are likely to remain high through next winter. Farmers and residents will almost certainly pay more for propane this fall and winter; the only question is how much more will they pay. If there is greater-than-normal demand for crop drying and home heating, the price of propane could be significantly higher than winter 2003 levels.

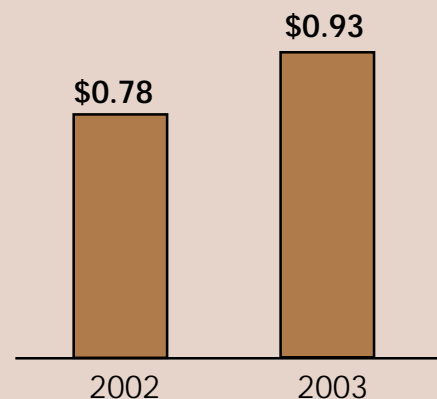


Natural Gas Supplies Low

On July 16, 2003, natural gas traded at \$5.01 per million Btu, 70 percent higher than the price from last July. The increase is attributed to growing

Propane Prices

July 2002 vs. July 2003
Per Gallon



Farmers Will



demand for industrial use and home heating, while supplies remained unchanged. Inventories have been drawn down to historic lows.

Natural gas is not easily transported from overseas, and North American fields are maturing, meaning new wells produce less natural gas for shorter amounts of time. Solutions for lowering prices, such as building new pipelines, may take five to 10 years to implement, so prices are predicted to remain above \$3 per million Btu for the near future.



Lessening the Impact

Although Iowans cannot affect the price per unit of fossil fuels in the short term, they can take steps to reduce the impact on their pockets. Efficient use of fossil fuels, such as properly maintaining vehicles and equipment, weatherizing and insulating homes and buildings, and purchasing high efficiency vehicles and appliances will reduce the amount of energy consumed. Use of renewable fuels such as biodiesel and ethanol blends, wherever practical, also may be cheaper and reduce demand for fossil fuels.

For more information, contact DNR Analyst Jennifer Moehlmann at (515) 281-8518; e-mail: Jennifer.Moehlmann@dnr.state.ia.us

E85 Gas Available at Four New Stations

While ethanol sales in Iowa continue to increase, so do the popularity and sales of E85 (85 percent ethanol, 15 percent gasoline).

Four gas stations in northwest Iowa are now selling E85 on a regular basis. Pronto Convenience Store, Akron; Midwest Farmers Co-op, Orange City; Community Oil Co, Rock Valley; and Co-op Gas & Oil, Sioux Center; began offering the renewable fuel this summer.

A local ethanol production facility, Siouxland Energy, supplies E85 to the stations, which are able to use existing tanks and pumps.

E85 can only be used in Flexible Fuel Vehicles designed to operate on E85, E10, regular gasoline, or any combination of the three. Currently, Daimler Chrysler, Ford, General Motors, Mercury, Mazda and Isuzu offer several models of FFVs.

E85 is also being offered at gas stations in Ames, Council Bluffs, Lake Mills, Northwood, Sergeant Bluff and West Burlington. For addresses of these retail stations, and for a complete list of FFV models, go to: www.iowadnr.com/energy/

Iowa's Ethanol Market Share Breaks Another Record

Ethanol-blends reached 64.8 percent of all taxable gasoline sold in Iowa in April 2003. That is the largest market share ever for the renewable fuel.

"Iowans continue to choose ethanol at the pumps," said Jennifer Moehlmann, energy data analyst at the DNR. "The use of ethanol at the gas pump not only benefits local farmers, but also strengthens Iowa's economy."

Iowa's 10 ethanol plants have the capacity to produce 624 million gallons of ethanol per year, about 23 percent of the nation's ethanol production. Additionally, seven more plants are planned for construction in the next two years.

The market share for ethanol blends during the first four months of 2003 was 63.2 percent, according to Moehlmann. At year's end, the market share for 2002 was 55.5 percent overall.

For more information, contact Jennifer Moehlmann with the DNR at (515) 281-8518; e-mail: Jennifer.Moehlmann@dnr.state.ia.us

An Environmentally Sweet Idea

New World Technology continued from pg. 1

creating a need for additional energy sources. The space especially required adequate cooling to help with the chocolate-making process in hot summer months.

A Proven Technology

Geothermal heat pump systems rely on the Earth's constant temperature as a heat source and sink. Using loops of pipe buried underground that transfer liquid, the pumps absorb heat from the liquid during the winter and dissipate heat from the building during the summer.

The technology can lower heating and cooling bills by 20 to 60 percent while enhancing comfort through constant, even temperatures and improved air quality.

Stam, who lives in Des Moines' Sherman Hill area, learned about geothermal systems from a neighbor who had installed one in his home. The technology seemed like a good solution for Stam's store, especially because of the potential energy savings.

"I wanted to find an alternative way to be smarter with resources," said Stam.

Stam contracted with Morrell Heating and Cooling in Waukee to install the geothermal system, with construction beginning in February 2003. Morrell drilled a well field in the store's small parking lot area, which consisted of 14 well holes, each 250 feet deep.

David Duede, field operations manager for Morrell, said it took about three weeks to complete the project, including drilling and heat pump equipment installation.

The 16.5-ton system began supplying heating and cooling for the building around April 1. The total cost of the system was about \$82,000, and Morrell predicts up to a 70 percent decrease in heating and cooling costs compared to prior bills, not taking into consideration the space expansion.

Sweet Success

According to Stam, he and customers already sense a noticeable difference in the comfort level in the building. He hopes to see a decline in energy costs during the next several months.

"I did this first and foremost because of the positive environmental impacts," said Stam, "but I hope it will eventually help the bottom line as well."

In addition, the chocolate maker was able to replace an old, crumbling cement parking lot with cobblestones that adds to the aesthetics and charm of the store.

A Solution for Iowans

Geothermal heat pump systems are becoming an increasingly popular



Installation of the heat pump equipment included drilling 14 holes, 250 feet deep each, in the parking lot of the store.

option for small businesses in Iowa. Diane Hansen with Alliant Energy estimates at least 120 businesses have adopted geothermal in their service territory.

"It's becoming popular because small businesses are looking for the best efficiency," said Hansen. "It means more off their bottom line."

"There's so much technology available today that helps us conserve resources," said Stam. "I need to be concerned about the survivability of my business forty years from now, not just in the short-term, and this type of technology helps ensure my long-term success."

Stam also is planning to install a geothermal heat pump system at his Sherman Hill home this summer.

This old world chocolate maker is demonstrating the smart business results that can be accomplished through new world energy choices.

Learn More.....

For more information about geothermal heat pump systems, visit these Web sites:

Iowa Department of
Natural Resources
www.iowadnr.com/energy/

Alliant Energy's
Geothermal Office
www.alliantenergygeothermal.com

Iowa Heat Pump Association
www.iaheatpump.org

New Solar Web Site for Midwest

www.solarmidwest.org

The DNR has launched a new Web site providing photovoltaic (PV) information and materials for seven states in the Midwest.

With funding from the U.S. Department of Energy, the site *Solar Power in*

the Midwest offers resources for both consumers and professionals on incorporating PV into buildings. The site includes a "yellow pages" of resources, case studies, links to state and national sites, and educational materials. Resources from Illinois, Indiana, Iowa, Minnesota, Missouri, Nebraska and Wisconsin are included.

Solar professionals can request to have their information included on the site by contacting Dave Evans with the Iowa DNR at (515) 281-6150; e-mail: Dave.Evans@dnr.state.ia.us

I-Renew Expo in September

The 12th Annual I-Renew Energy Expo is scheduled for September 6 and 7 at Prairiewoods Franciscan Center in Hiawatha, Iowa.

Sponsored by the Iowa Renewable Energy Association (I-Renew), the expo draws thousands of attendees each year interested in alternative energy resources in Iowa. The event includes presentations,

workshops, exhibits and activities on topics ranging from wind power to solar technologies to energy efficiency applications. The Iowa DNR will be exhibiting an E85 vehicle during the expo.

For complete details, go to www.irenue.org, or contact the I-Renew office at (563) 288-2552.

It's Time to Apply for 2003

Governor's Iowa Environmental Excellence Awards

Governor Vilsack and the State of Iowa are calling on Iowa organizations, businesses and individuals who demonstrate leadership and initiative in preserving the state's natural resources to apply for the 2003 Governor's Iowa Environmental Excellence Awards.

Awards will be given in several categories, including comprehensive environmental programs, along with special

project awards in energy efficiency/renewable energy, air quality, water quality, waste management and habitat development.

The awards are sponsored and coordinated by the Governor's Office, the Iowa Department of Natural Resources, the Iowa Department of Agriculture and Land Stewardship, the Iowa Department of Economic Development and the Iowa Department of Education.

Applications are due by November 10, 2003. For more information, contact Julie Tack at the DNR at (515) 281-8665; e-mail Julie.Tack@dnr.state.ia.us

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Calendar of Events

August 20. Oelwein, IA. *The Iowa Manure Digester Conference*. Sportsman Restaurant. Participants will learn about setting up value-added manure digesters to generate electricity. For registration information, contact Dan Meyer at (563) 425-3331 or e-mail: djmeyer@iastate.edu

August 28. Ames, IA. *Farms, Food and the Future Conference*. Scheman Building, Iowa State University. A conference for producers, processors and others wanting to learn more about the future of Iowa's commodities. For registration information, contact Terrie Hunter at (515) 294-5961 or e-mail: thunter@iastate.edu

September 6-7. Hiawatha, IA. *I-RENEW's 12th Annual Energy Expo*. Prairiewoods Fransiscan Center. The Expo will explore alternative sources of energy and feature workshops, exhibitors from throughout the Midwest and entertainment. For more information, visit www.irenew.org or contact the I-RENEW office at (563) 288-2552 or e-mail: irenew@irenew.org

October 1. Des Moines, IA. *Iowa Association for Energy Efficiency Annual Conference*. The conference will feature Environmental Psychologist, Dr. Doug McKenzie-Mohr; Energy Economics Consultant, Dr. Ken Seiden; lunchtime speakers on the investor-owned utilities' updated energy efficiency plans, a panel discussion by real-world energy efficiency practitioners, and networking opportunities. For more information, contact Patti Cale-Finnegan at (515) 289-1999 or e-mail: pcale@iamu.org

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